Device Uses Air Gap for Easier Fraction Isolation

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WARF: P130107US01

Inventors: David Beebe, Scott Berry

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a device that requires no oil to extract and purify fractions of interest from a biological sample.

Overview

Isolating analytes from complex biological samples is one of the most crucial steps in many areas of biological research and clinical diagnostics. Paramagnetic particles (PMPs) or beads are important tools in this process. They can be used to bind a target of interest while background material and contaminants get washed away. More efficiently, the bound PMP/target can be magnetically moved from a background solution, through an immiscible phase, to separate the bead-bound analyte from the bulk sample solution.

With this technique, in contrast to other exclusion-based methods, the analyte-bound beads are moved through the interface without contact with a surface, allowing rapid and highly parallel isolations without loss due to friction along a surface. The device is highly amenable to well plate-based infrastructure, including liquid handling robots and multichannel pipettes.

The Invention

UW–Madison researchers have developed a new device for isolating desired fractions from a biological sample. The device is made of two plates separated by a gap. The first plate has droplets of bound sample/PMPs positioned on the surface. A second plate containing another reagent is positioned below. A magnet pulls the PMP/sample from the first plate, through the air gap, onto the second plate.

Applications

- Direct isolation of nucleic acids from a biological sample including DNA, RNA, proteins and cells from a variety of matrices

Key Benefits

- Does not require oil
- Reduces friction-based losses
- Device is straightforward to make and use.
- Empowers simple, efficient purification
- Increases throughput
- Useful in areas with limited access to technology

Additional Information

For More Information About the Inventor

- David Beebe

Related Technologies

- For more information about devices that use a ‘separation zone’ to extract fractions from a biological sample, see WARF reference number P110080US01.

Tech Fields

- Analytical Instrumentation, Methods & Materials : Microfluidics
- Research Tools : DNA & RNA tools

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846